
U.S. Department of the Interior • U.S. Geological Survey

MINERAL INDUSTRY SURVEYS

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PRECIOUS METALS IN MAY 1997

U.S. mines produced 26,700 kilograms of gold and 122,000 kilograms of silver in May 1997. Gold production in Nevada, the largest producer, and California, the second largest producer, was essentially unchanged from the previous month. Production of silver was down by about 19% in Nevada and 13% in California while Arizona reported a modest 3% increase. Total production in May was down by about 4%.

Gold

Domestic.—Insignificant amounts of gold were reported in samples collected at the Josh deposit in southern Nevada. This latest mining scandal reportedly revealed evidence of the tampering with drill samples, known as salting, in which gold from other sources is added (Metal Bulletin, 1997a).

International.—Gold demand monitored by the World Gold Council reached 771 metric tons of gold in the first quarter of 1997. This demand is the highest quarterly number the Council has ever recorded, and represents a 17% increase over last year's first quarter figure. Demand in the developing countries of Asia, the Middle East, and Latin America rose 22% to a new quarterly record. In the developed markets, demand rose 2% in 1996; jewelry, gold bars, and gold coins were the top performers (Platt's Metal's Week, 1997d).

Lihir gold mine, in Papua New Guinea, poured its first gold. Initial production was from the treatment of oxide ore, but treatment of sulfide ores remained on schedule for this August. Total output for 1997 is expected to be 5,400 kilograms (175,000 ounces) of gold, rising to about 18,700 kilograms (600,000 ounces) of gold per year at full production (Mining Journal, 1997).

Venezuelan gold production rose 71% in 1996. This sharp increase in output has been attributed to additional production from the state gold company Minerven, a unit of holding company CVG which holds a 30% stake in the Las Cristinas

deposit (Metal Bulletin, 1997b).

Update.—The Reserve Bank of Australia sold 167 tons of gold, or more than two-thirds of its total reserves over the first 6 months of 1997. Widespread gold mine closures are said to be feared in Australia, which is rated as the world's second highest-cost gold producer behind South Africa. Mines considered most vulnerable include Telfer, Big Bell, Wiluna, Paddington, and Meekatharra. According to Sydney-based AME Mineral Economics, Australia's cost of gold production was \$271 per ounce in 1996, up from \$253 per ounce in 1995 (Platt's Metals Week, 1997a).

The gold market has come under short selling pressure, caused particularly by the Australian Reserve Bank sales, and world gold prices have plunged in July to a 4-year low. With the Swiss, German, and French central banks talking about reviewing their gold policies, gold remains in a precarious position. On the positive side, dealers have noted that the demand for gold has increased considerably since the price of physical gold has fallen below \$350 per ounce (Platt's Metals Week, 1997b).

When the price of gold plunged below \$320 per ounce during the week of July 7th, London-based Gold Fields Mineral Services (GSMS) announced that about 25% of the world's gold production was uneconomic at that price, based on cash cost of production. GFMS added that on a total-cost basis, about 50% of the world's gold mines were uneconomic if benefits derived from hedging were excluded. While most of the new gold mining operations have production costs at or well below \$300 per ounce of gold, the majority of the older mines, located mainly in South Africa and Australia, are high-cost operations (Platt's Metal Week, 1997c).

Silver

Lucky Friday Mine to Increase Silver Output.—The

board of directors of Hecla Mining Co., Coeur d'Alene, ID, announced that they had approved the expenditures necessary to double silver production at the Lucky Friday mine in northern Idaho. Approval was given also to the final mine design and engineering plans for development into the expansion area known as the Gold Hunter deposit. The underground expansion area is located about 5,000 feet northwest of the Lucky Friday vein currently being mined. The Gold Hunter deposit's main vein has nearly twice the silver grade and twice the width of the Lucky Friday vein and is expected to push Lucky Friday's annual silver production to more than 4 million ounces by 1998. The resource is currently estimated by the company at 50 million ounces or more of silver. Total proven and probable reserves at Lucky Friday, including the expansion area, are 18.5 million ounces of silver. The mine produced 1.9 million ounces of silver in 1996 (Hecla Mining Co., 1997).

Deficit in World Silver Supply Increases.—Demand for silver in the photographic, jewelry, and flatware sectors led to a 172-million-ounce decline in the world's bullion stocks, according to the U.S.-based Silver Institute. Stocks at the end of 1996 were about 800 million ounces, the seventh consecutive year of decline. World mine production increased to 493 million ounces, with principal product mines generating 17% of the total. Mexico continued to be the largest producer, increasing output in 1996 to 81 million ounces from 76 million ounces in 1995. U.S. mines produced about 50 million ounces, a modest increase over 1995 production; however, an increase in principal product mine output was nearly offset by a decline in byproduct silver production by a number of major gold producers.

The United States continued to be the largest consumer of silver with 151 million ounces consumed in 1996. India, the second-largest consumer, consumed 112 million ounces. India was also the world's largest importer of silver, importing more than 520 million ounces between 1990 and 1996 (Silver Institute, 1997).

Silver Used in Windshields.—Silver is the major material in a transparent metallic coating used for the first time in the windshield glass of some motor vehicles, giving the glass the ability to reflect solar energy away from the passenger and to serve as an AM/FM antenna. The windshields are produced by PPG Industries Inc., Pittsburgh, PA, at a plant in Evansville, IN, which uses vacuum sputtering to apply the coatings. Coatings are applied to the windshields in nine layers of metals and metal oxides, each only 1,500 angstroms thick. The layers stop about 60% of all the energy from the sun, but, in compliance with federal regulations, pass more than 70% of the sun's visible light. By serving as the AM/FM antenna, the windshield eliminates the need for a conventional exterior antenna and its copper connectors (American Metal Market, 1997).

Platinum Group Metals

Demand for platinum rose by 40,000 ounces to 4.88 million

ounces in 1996 according to Johnson Matthey's *Platinum 1997* review. There were significant increases in industrial consumption and sales to China, while demand for platinum in jewelry rose modestly. However, purchases by automakers declined slightly, and there was a sharp fall in sales of large platinum bars to Japanese investors. The Johnson Matthey review reported that demand for palladium rose by 30,000 ounces to 6.15 million ounces in 1996. Consumption in the auto sector continued to accelerate, but sales to the electronics sector contracted sharply. Demand for rhodium fell by 16,000 ounces to 458,000 ounces, as higher sales to glass companies were offset by lower demand from the auto industry. Supplies of rhodium rose by 40,000 ounces, and exceeded consumption by 18,000 ounces (Johnson Matthey, 1997).

Update: Stockpile Releases Platinum to Mint.—Fort Belvoir, VA, June 13, 1997—The administrator of the Defense Logistics Agency's Defense National Stockpile Center (DNSC) announced on June 13, that the DNSC is loaning 81,000 troy ounces of Stockpile platinum to the U.S. Mint for use in the Mint's coinage program. The terms of the agreement between the Mint and the Stockpile involve a loan of 81,000 troy ounces of 99.95% platinum to the Mint. The Mint will return a like amount of similar quality platinum before the agreement expires in the year 2003. If the occasion should arise, the Stockpile has the right to require the return of its platinum upon 30 days notice. The actual transfer of the material took place starting on June 13, 1997. The move involved taking the platinum from DNSC vaults in the Treasury depository at West Point, New York, and delivering it to the Mint. This was an internal Government transaction. No money changed hands nor was the material placed in commercial commodity markets.

References Cited

- American Metal Market, 1997, GM planning to use silver in windshields: American Metal Market, v. 105, no. 103, May 29, p. 5.
- Hecla Mining Co, 1997, Hecla directors approve Friday expansion plans: Coeur d'Alene, Idaho, Hecla Mining Co. news release, May 12, 2 p.
- Johnson Matthey, 1997, *Platinum 1997*: Johnson Matthey, 52 p.
- Metal Bulletin, 1997a, Gold sample tampering alleged in Nevada: Metal Bulletin, no. 8181, May 26, p. 15.
- 1997b, Venezuela production figures mixed: Metal Bulletin, no. 8183, June 2, p. 6.
- Mining Journal, 1997, Lihir pours gold: Mining Journal, v. 328, no. 8431, May 30, p. 1.
- Platt's Metals Week, 1997a, Australia's bank sells gold: Platt's Metals Week, v. 68, no. 28, July 14, p. 15.
- 1997b, Gold prices plunge to four-year low: Platt's Metals Week, v. 68, no. 27, July 7, p. 1, 15.
- 1997c, Low gold price threatens high-cost mines: Platt's Metals Week, v. 68, no. 28, July 14, p. 13.
- 1997d, Record gold demand in Q1—WGC: Platt's Metals Week, v. 68, no. 21, May 26, p. 14.
- Silver Institute, 1997, World silver survey 1997: Silver Institute, 60 p.

TABLE 1
MINE PRODUCTION OF RECOVERABLE GOLD AND SILVER IN THE UNITED STATES, BY STATE 1/

(Kilograms)

	Arizona	California	Montana	Nevada	Other States 2/	Total
Gold:						
1996: p/						
May	168	2,170	959	18,100	4,860	26,300
June	117	2,210	703	17,500	4,960	25,500
July	119	2,080	987	19,000	4,990	27,200
August	158	1,880	1,010	19,300	5,250	27,600
September	232	1,920	968	18,500	5,600 r/	27,200
October	223	1,920	1,140	19,100	5,330 r/	27,800 r/
November	125	1,860	929	18,000	4,810	25,700
December	124	1,980	876	19,800	5,210 r/	28,000
Jan.-Dec.	2,070	24,500	10,800	215,000	60,900	313,000
1997:						
January	W	1,840	733	18,200	5,270	26,100
February	W	1,840	754	16,100	5,110	23,800
March	W	1,890	767	20,000	4,990 r/	27,700 r/
April	W	1,890	714	18,500	5,400 r/	26,500 r/
May	W	1,870	735	18,400	5,740	26,700
Jan.-May	W	9,310	3,700	91,200	26,500	131,000
	Arizona	California	Idaho	Nevada	Other States 3/	Total
Silver:						
1996: p/						
May	15,200	1,990	16,700	49,400	34,500	118,000
June	12,100	1,570	16,300	57,700	39,800	127,000
July	13,700	1,990	18,300	55,300	38,400	128,000
August	13,600	1,470	18,600 r/	53,900	45,800	133,000
September	13,000	1,330	18,000 r/	57,200	37,500	127,000 r/
October	12,500	1,450	18,600 r/	67,700	35,800	136,000 r/
November	13,900	1,340	17,700 r/	48,900	32,200	114,000 r/
December	14,100	1,250	17,800 r/	58,300	34,800	126,000
Jan.-Dec.	167,000	22,400 r/	199,000 r/	617,000	435,000 r/	1,440,000
1997:						
January	11,200	1,120	18,200	64,600	35,200	130,000
February	10,300	1,090	17,400	46,200	36,400	111,000
March	14,700	1,370	18,000	61,700	30,000 r/	126,000 r/
April	12,000	1,670	18,100	58,100	36,900 r/	127,000
May	12,400	1,440	18,100	47,000	42,700	122,000
Jan.-May	60,700	6,710	90,000	278,000	181,000	616,000

p/ Preliminary. r/ Revised. W Withheld to avoid disclosing company proprietary data; included with "Other States."

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes Alaska, Colorado, Idaho, New Mexico, South Carolina, South Dakota, Utah, Wisconsin, and State indicated by symbol "W."

3/ Includes Alaska, Colorado, Michigan, Missouri, Montana, New Mexico, New York, South Carolina, South Dakota, Utah, Wisconsin, and State indicated by symbol "W."

TABLE 2
SELECTED PRECIOUS METAL PRICES

(Dollars per troy ounce)

	Gold	Silver	Platinum	Palladium
Engelhard Industries:				
1996:				
Year:				
Low/date	368.67 (Dec. 03)	4.67 (Dec. 03)	368.00 (Dec.16)	117.00
High/date	391.06 (Aug. 05)	5.82 (Feb. 02)	433.00 (Feb. 05)	146.00
Average	389.08	5.20	397.97	130.39
1997:				
April				
Low/date	340.47/29	5.02/02	383.00/21	150.00
High/date	352.30/02	4.70/15	364.00/08	164.00
Average	350.73	4.96	369.61	143.73
May				
Low/date	340.48/01	4.67/22	372.00/01	158.00
High/date	350.34/14	4.90/12	415.10/29	200.00
Average	345.00	4.76	390.14	173.38
June:				
Low/date	335.77/30	4.65/30	403.00/02	177.00
High/date	345.49/09	4.82/06	490.00/09	245.00
Average	341.98	4.74	432.52	209.47
Year to date:				
Low/date	335.77 (June 30)	4.65 (Jan. 08)	403.00 (June 02)	177.00
High/date	367.82 (Jan. 01)	5.30 (Mar. 14)	490.00 (June 06 & 09)	245.00
Average	348.32	4.89	383.51	159.63
Handy and Harman:				
1996:				
Average	387.81	5.18	XX	XX
1997:				
April	344.47	4.77	XX	XX
May	343.75	4.75	XX	XX
June	340.75	4.74	XX	XX
Year to date	347.08	4.88	XX	XX
London Final:				
1996:				
Average	387.70	5.20	XX	XX
1997:				
April	344.47	4.77	XX	XX
May	343.84	4.75	XX	XX
June	340.75	4.75	XX	XX
Year to date	347.20	4.89	XX	XX

XX Not applicable.

Source: Platt's Metals Week.

TABLE 3
U.S. IMPORTS AND EXPORTS OF GOLD, BY COUNTRY 1/

(Kilograms of gold content, unless otherwise specified)

Country	Ores and concentrates 2/	Dore and precipitates	Refined bullion 3/	Total	Waste and scrap 4/ (gross weight)
Imports for consumption:					
1996:					
Year	3,460	11,900	143,000	159,000	13,000
1997:					
February	243	1,810	12,700	14,700	658
March	121	1,630	27,000	28,700	914
April					
Belgium	--	79	514	593	--
Brazil	--	--	2,190	2,190	--
Canada	--	--	9,550	9,550	159
Chile	--	--	563	563	1
Colombia	--	--	634	634	--
Dominican Republic	--	--	33	33	299
Mexico	167	758	117	1,040	249
Netherlands Antilles	--	--	356	356	--
Peru	--	33	1,050	1,080	16
Switzerland	--	--	645	645	--
United Kingdom	--	--	2,990	2,990	1
Uruguay	--	--	888	888	--
Other	--	7	337	344	192
Total	167	877	19,900	20,900	917
Year to date	840	5,110	72,000	77,900	3,510
Exports:					
1996:					
Year	374	65,100	406,000	471,000	89,900
1997:					
February	97	3,950	23,200	27,300	3,880
March	74	6,180	82,700	88,900	5,510
April					
Canada	8	933	2,980	3,920	2,370
Germany	--	--	8	8	1,130
Hong Kong	--	--	1,500	1,500	114
Korea, Republic of	--	--	1,040	1,040	--
Mexico	--	--	661	661	--
Switzerland	--	2,570	58,300	60,900	--
Taiwan	--	--	1,010	1,010	--
United Kingdom	--	2,280	5,240	7,520	905
Other	--	3	552	555	345
Total	8	5,790	71,300	77,100	4,870
Year to date	183	20,800	187,000	208,000	19,000

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes gold content of base metal ores, concentrates, and matte imported for refining.

3/ Bullion also moves in both directions between U.S. markets and foreign stocks on deposit in the Federal Reserve Bank. Monetary gold excluded.

4/ "Waste and scrap" not included in "Total."

Source: Bureau of the Census.

TABLE 4
U.S. IMPORTS AND EXPORTS OF SILVER, BY COUNTRY 1/

(Kilograms of silver content, unless otherwise specified)

Country	Ores and concentrates 2/	Dore and precipitates	Refined bullion	Total	Waste and scrap 3/ (gross weight)
Imports for consumption:					
1996:					
Year	153,000	281,000	2,580,000	3,010,000	1,810,000
1997:					
February	12,800	25,500	143,000	181,000	101,000
March	8,220	25,200	163,000	196,000	134,000
April:					
Canada	--	17	74,400	74,400	34,400
Chile	--	23,300	2,500	26,400	2,730
Dominican Republic	--	--	--	--	124
Germany	--	--	--	--	18,700
Malaysia	--	--	--	--	23,000
Mexico	17,300	653	89,500	107,000	--
Peru	--	3,560	30,300	33,800	--
Philippines	--	--	--	--	8,800
Other	--	55	--	55	93
Total	17,300	28,200	197,000	242,000	87,800
Year to date	40,500	113,000	706,000	860,000	437,000
Exports:					
1996:					
Year	1,520 r/	43,300	2,900,000 4/	2,950,000	1,280,000
1997:					
February	11,600	9,380	41,400	62,400	87,000
March	--	9,510	80 5/	9,590	92,300
April:					
Belgium	--	--	--	--	19,900
Canada	4,110	--	--	4,110	23,900
China	--	657	--	657	5,420
France	--	--	--	--	401
Germany	--	--	--	--	1,000
Japan	--	225	38,500	38,800	1,600
Sweden	--	--	--	--	1,590
Switzerland	--	332	--	332	--
Taiwan	--	6,160	--	6,160	--
United Kingdom	--	441	--	441	5,810
Uruguay	--	--	1,990	1,990	37
Other	--	18	--	18	167
Total	4,110	7,830	40,500	52,500	59,800
Year to date	15,800	32,000	135,000	183,000	310,000

r/ Revised.

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Includes silver content of base metal ores, concentrates, and matte imported for refining.

3/ "Waste and scrap" not included in "Total."

4/ Verification of Bureau of the Census exports was not possible for some months of 1996.

5/ All or part of these data have been referred to the Bureau of the Census for verification..

Source: Bureau of the Census.

TABLE 5
U.S. IMPORTS AND EXPORTS OF PLATINUM-GROUP METALS, BY COUNTRY 1/

(Kilograms of metal content, unless otherwise specified)

Country	Ores and concentrates	Waste and scrap (gross weight)	Refined					Osmium	Ruthenium	
			Platinum	Palladium	Rhodium	Iridium				
Imports for consumption:										
1996:										
Year	1,960	5,060	73,700 2/	146,000	9,650	1,810	329	15,600		
1997:										
February	--	314	7,210	11,500	1,200	188	--	899		
March	--	326	4,660	6,560	447	36	--	1,000		
April:										
Belgium	--	--	344	1,620	1	--	--	--		
Canada	--	48	211	321	--	--	--	--		
China	--	--	--	365	--	--	--	--		
France	--	--	--	--	--	--	--	--		
Germany	--	51	550	224	32	27	--	--		
India	--	--	23	605	--	--	--	--		
Japan	--	3	--	--	10	3	--	2		
Mexico	--	85	--	--	--	--	--	--		
Norway	--	--	16	145	--	1	--	5		
Russia	--	--	23	871	--	--	--	--		
South Africa	--	--	4,220	1,730	180	27	18	882		
Switzerland	--	--	216	412	1	--	--	16		
United Kingdom	--	253	1,150	572	17	28	--	443		
Other	--	168	33	166	--	--	--	--		
Total	--	608	6,790	7,030	241	86	18	1,350		
Year to date	--	1,430	25,100	32,500	2,700	581	18	4,920		
Exports:										
1996:										
Year	484	8,640	12,700	26,700	196	123 3/				
1997:										
February	63	554	529	2,920	7	5 3/				
March	60	1,120	1,950	3,970	5	9 3/				
April:										
Belgium	--	20	754	681	--	--				
Canada	--	1	22	86	--	--				
France	--	--	17	113	--	--				
Germany	--	251	41	86	--	--				
Hong Kong	--	--	--	--	--	--				
Ireland	--	--	113	121	2	1 3/				
Italy	--	--	--	771	--	--				
Japan	--	94	586	434	--	--				
Korea, Republic of	--	--	10	297	3	6 3/				
Mexico	1	1	2	270	--	--				
Netherlands	--	--	2	240	--	4 3/				
South Africa	--	--	--	--	--	--				
Switzerland	28	--	842	96	--	--				
Taiwan	--	--	10	324	--	--				
United Kingdom	87	380	90	116	--	--				
Other	--	5	210	89	4	--				
Total	116	752	2,700	3,720	9	11 3/				
Year to date	355	3,420	6,100	13,300	22	52 3/				

1/ Data are rounded to three significant digits; may not add to totals shown.

2/ Of this amount, 2,070 kilograms was in the form of platinum coins.

3/ Includes osmium and ruthenium.

Source: Bureau of the Census.